

CLAIMS

Sub A₃ 1. A hub for a pulley, gear, or wheel, said hub having a first opening for a shaft having a keyway, said first opening having an inner surface and first and second ends, said
5 hub comprising:

- a) an integral key extending radially inward from said inner surface of said first opening for engaging said keyway when said hub is disposed on said shaft, and
b) an integral stop extending across at least a portion of one of said first and second ends of said first opening, for preventing said shaft from extending beyond said
10 hub when said hub is disposed on said shaft.

2. A hub as recited in claim 1, wherein said integral key extends from said first end to said second end of said first opening.

3. A hub as recited in claim 1, further comprising a second opening extending through said integral stop, said second opening communicating with said first opening.

Sub A₄ 4. A hub as recited in claim 3, wherein said shaft has an end and said shaft has a tapped hole in said end, whereby said second opening provides access to said tapped hole by a bolt for fastening said hub to said shaft.

5. A hub as recited in claim 3, wherein said second opening is at least partially aligned with said integral key.

20 6. A hub as recited in claim 3, wherein said integral key extends at least into said second opening.

7. A hub as recited in claim 6, wherein said second opening has a round shape and said second opening is disposed concentrically with said first opening.

8. A hub as recited in claim 6, wherein at least a portion of said second opening has a pie shape and the pie-shaped portion of said second opening is disposed concentrically with said integral key.
9. A hub as recited in claim 6, wherein said integral stop extends across only a portion of one of said first and second ends of said first opening, said integral stop being bounded by a chord extending across said one of said first and second ends of said first opening, said second opening having a segment shape bounded by said chord.
10. A hub as recited in claim 9, wherein said second opening is disposed concentrically with said integral key.
11. A hub as recited in claim 3, wherein said integral key extends through said second opening.
12. A hub as recited in claim 3, wherein said second opening is circular and said second opening has a diameter smaller than said first opening.
13. A hub as recited in claim 12, wherein said second opening is concentric with said first opening.
14. A hub as recited in claim 1, said hub being formed by a powder metallurgy process.
15. A hub as recited in claim 14, said hub being formed by the steps of:
- a) providing a mold,
 - b) filling said mold with metal powder of suitable composition, particle size, and particle shape,
 - c) compacting said metal powder in said mold at suitable time and pressure to form a preform,
 - d) removing said preform from said mold,

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- e) providing a non-oxidizing atmosphere, and
- f) applying heat to said preform at suitable time and temperature in said non-oxidizing atmosphere to sinter said metal powder.

16. A hub as recited in claim 15, wherein said metal powder is nickel steel powder having a composition by weight of 91.9% to 98.7% Fe, 1.0% to 3.0% Ni, 0.3% to 0.6% C, zero to 2.5% Cu, and any other elements taken together totaling no more than 2.0% maximum.

Sub A: 17. A hub as recited in claim 1, having an outer surface, said hub further comprising a hole communicating between said inner surface of said opening and said outer surface, said hole being tapped with internal threads for a setscrew.

18. A pulley comprising:

- a) a hub as recited in claim 1, and
- b) a disk-shaped body having a rim formed with a peripheral recess for receiving a pulley belt, said disk-shaped body being affixed to said hub.

19. A pulley as recited in claim 18, wherein said disk-shaped body is affixed to said hub by a weld.

20. A pulley as recited in claim 18, wherein said disk-shaped body is affixed to said hub by pressing.

Sub A: 21. A hub for a pulley, gear, or wheel, said hub having a first opening for a shaft, said first opening having an inner surface and first and second ends, said hub comprising:

- a) means integral with said inner surface of said first opening for preventing relative rotation of said hub on said shaft when said hub is disposed on said shaft, and

b) an integral stop extending across at least a portion of one of said first and second ends of said first opening, for preventing said shaft from extending beyond said hub when said hub is disposed on said shaft.

Sub Dg 22. A hub as recited in claim 21, said hub being formed by a powder metallurgy process.

5 23. A hub as recited in claim 21, said means integral with said inner surface comprising one or more flat surfaces.

24. A hub as recited in claim 23, said one or more flat surfaces together forming a first opening having a generally polygonal cross-section.

10 25. A hub as recited in claim 21, said means integral with said inner surface comprising one or more splines.

26. A hub as recited in claim 21, said hub having an outer peripheral surface portion concentric with said first opening, said outer peripheral surface portion having a right circular cylindrical form.

15 27. A hub as recited in claim 21, said hub having an outer peripheral surface portion concentric with said first opening, said outer peripheral surface portion having a right elliptical cylindrical form.

28. A hub as recited in claim 21, said hub having an outer peripheral surface portion concentric with said first opening, said outer peripheral surface portion having a pyramidal form.

20 29. A hub as recited in claim 21, said hub having an outer peripheral surface portion concentric with said first opening, said outer peripheral surface portion having a conical form.

30. A hub as recited in claim 21, said hub having an outer peripheral surface portion concentric with said first opening, said outer peripheral surface portion having a splined form. ^G

²¹ 31. A gear comprising:

- 5 a) a hub as recited in claim 1, and
b) a disk-shaped body having a rim formed with gear teeth,
said disk-shaped body being affixed to said hub.

²² 32. A gear as recited in claim ²¹31, wherein said disk-shaped body is affixed to said hub by a weld.

10 ²³ 33. A gear as recited in claim ²¹31, wherein said disk-shaped body is affixed to said hub by pressing.

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